

**Notice of Allowability**

Application No.

09/768,301

Examiner

Baoquoc N. To

Applicant(s)

CHA ET AL.

Art Unit

2162

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 01/11/2006.
2. ☒ The allowed claim(s) is/are 1-37.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some\* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

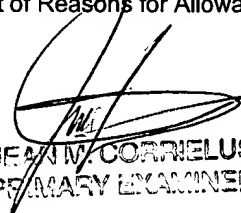
Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08),  
Paper No./Mail Date 03/30/2004
4. ☐ Examiner's Comment Regarding Requirement for Deposit  
of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413),  
Paper No./Mail Date \_\_\_\_\_.
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_.

  
JEANNETTE CORRIELLUS  
PRIMARY EXAMINER

### **DETAILED ACTION**

1. Claims 1, 24 and 34 are amended in the amendment filed on 01/11/2006.

Claims 1-37 are pending in this application.

### ***Information Disclosure Statement***

2. The information disclosure statement (IDS) submitted on 03/30/2004. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

### ***Allowable Subject Matter***

3. Claims 1-37 are allowed over prior art made of record.

The following is an examiner's statement of reasons for allowance:

As to claim 1, none of the known prior art alone or in combination either teach or suggest "generating a differential log record using  $\Delta_t = b_{t-1} \oplus b_t$  where  $\Delta_t$  is the differential log record generated for the t-th update on a database object b,  $\oplus$  is the bit-wise exclusive-OR (XOR) operation,  $b_{t-1}$  is the image of the database before the t-th update occurs, and  $b_t$  is the image of the database after the t-th update occurs; and the recovery method comprising: redoing updates of committed transactions using  $b_{s+p} = b_s \oplus \Delta_{(1)} \oplus \Delta_{(2)} \dots \oplus \Delta_{(p)}$ , where  $b_s$  is the image of a database object b after s number of updates are reflected,  $b_{s+p}$  is the image of b rolled forward from  $b_s$  by p number of updates involved in committed transactions,  $\oplus$  is the bit-wise XOR operation, and where the sequence of the differential log records applied,  $\Delta_{(1)}$  through  $\Delta_{(p)}$ , is any possible

arrangement of the set of sequentially-generated differential log records  $\{\Delta_{s+1}, \dots, \Delta_{s+p-1}, \Delta_{s+p}\}$  in the order independent from the order of log creation, and undoing updates of uncommitted transactions using  $b_{s-q} = b_s \oplus \Delta_{(1)} \oplus \Delta_{(2)} \dots \oplus \Delta_{(q)}$ , where  $b_s$  is the image of a database object  $b$  after  $s$  number of updates are reflected,  $b_{s-q}$  is the image of  $b$  rolled backward from  $b_s$  by  $q$  number of updates involved in uncommitted transactions,  $\oplus$  is the bit-wise XOR operation, and where the sequence of the differential log records applied,  $\Delta_{(1)}$  through  $\Delta_{(q)}$ , is any possible arrangement of the set of sequentially-generated differential log records  $\{\Delta_{s-q+1}, \Delta_{s-q+2}, \dots, \Delta_s\}$  in the order independent from the order of log creation."

Claims 2-23 are depended on claim 1, therefore, claims 2-23 are allowed under the same reason as to claim 1.

Claim 24 is a transaction processing system to perform method recited in claim 1; therefore, claim 24 is allowed under the same reason as to claim 1.

Claims 25-33 are depended on claim 24; therefore, claims 25-33 are allowed under the same reason as to claim 24.

Claim 34 is a computer-readable storage medium that contains a program when executed to perform the method recited in claim 1; therefore, claim 34 is allowed under the same reason as to claim 1.

Claims 35-37 are depended on claim 34; therefore, claims 35-37 are allowed under the same reason as to claim 37.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably

accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

### ***Conclusion***

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

#### **Patent:**

Menon	(US. Patent No. 6,327,671 B1)	Patent date: 12/04/2001.
Chen et al.	(US. Patent No. 6,513,093 B1)	Patent date: 01/28/2003.
Stiffler	(US. Patent No. 5,751,939)	Patent date: 05/12/1998.

#### **NPL:**

Hac et al. A new cell loss recovery method using forward error correction in ATM networks, International Journal of Network Management, Volume 8, March-April 1998, page 87-103.

Blaum et al. EVENODD: an optimal scheme for tolerating double disk failure in RAID architectures, International Conference on Computer Architecture, 1994, page 245-254.

### ***Contact Information***

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Baoquoc N. To whose telephone number is at 571-272-4041 or via e-mail BaoquocN.To@uspto.gov. The examiner can normally be reached on Monday-Friday: 8:00 AM – 4:30 PM, EST.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Breene can be reached at 571-272-4107.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231.


The fax numbers for the organization where this application or proceeding is assigned are as follow:

(571) -273-8300

[Official Communication]

BQ To

January 23rd, 2006



JEAN M. CORRIELLUS  
PRIMARY EXAMINER